

Attachment F

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Review of the Section 251 Unbundling)	
Obligations of Incumbent Local Exchange)	CC Docket No. 01-338
Carriers)	
)	
Implementation of the Local Competition)	
Provisions of the Telecommunications Act of)	CC Docket No. 96-98
1996)	
)	
Deployment of Wireline Services Offering)	CC Docket No. 98-147
Advanced Telecommunications Capability)	

DECLARATION OF ROBERT D. WILLIG

I. QUALIFICATIONS.

1. I am Professor of Economics and Public Affairs at the Woodrow Wilson School and the Economics Department of Princeton University, a position I have held since 1978. Before that, I was Supervisor in the Economics Research Department of Bell Laboratories. My teaching and research have specialized in the fields of industrial organization, government-business relations, and welfare theory.
2. I served as Deputy Assistant Attorney General of Economics in the Antitrust Division of the Department of Justice from 1989 to 1991. I am the author of *Welfare Analysis of Policies Affecting Prices and Products*; *Contestable Markets and the Theory of Industry Structure* (with W. Baumol and J. Panzar), and numerous articles, including "Merger Analysis, IO theory, and Merger Guidelines." I am also a co-editor of *The Handbook of*

Industrial Organization, and have served on the editorial boards of the *American Economic Review*, the *Journal of Industrial Economics* and the MIT Press Series on regulation. I am an elected Fellow of the Econometric Society and an associate of The Center for International Studies.

3. I have been active in both theoretical and applied analysis of telecommunications issues. Since leaving Bell Laboratories, I have been a consultant to AT&T, Bell Atlantic, Telstra and New Zealand Telecom, and have testified before the U.S. Congress, this Commission, and the public utility commissions of about a dozen states. I have been on government and privately-supported missions involving telecommunications throughout South America, Canada, Europe, and Asia. I have written and testified on such subjects within telecommunications as the scope of competition, end-user service pricing and costing, unbundled access arrangements and pricing, the design of regulation and methodologies for assessing what activities should be subject to regulation, directory services, bypass arrangements, and network externalities and universal service. On other issues, I have worked as a consultant with the FTC, the Organization for Economic Cooperation and Development, the Inter-American Development Bank, the World Bank and various private clients. I also served on the Defense Science Board task force on the antitrust aspects of defense industry consolidation and on the Governor of New Jersey's task force on the market pricing of electricity.

II. INTRODUCTION AND SUMMARY OF CONCLUSIONS

4. I understand that the purpose of this docket is comprehensively to review – in light of the actual market experience – the rules that govern the conditions in which incumbent local

exchange services (“ILECs”) must make unbundled network elements (“UNEs”) available to requesting competitive local exchange carriers (“CLECs”) at cost-based rates under §§ 251(c)(3) and 252(d) of the Communications Act. The *Notice* observes that the Commission is statutorily bound to foster both facilities and non-facilities based entry. But it suggests that the Commission’s overriding objective is to promote facilities-based exchange entry and investment and to foster the greater availability of “broadband” services to residential consumers. It states that facilities-based exchange carriers include not only “full facilities-based carriers,” but also carriers that purchase UNEs (*e.g.*, loops and transport) and combine them with facilities that they supply (*e.g.*, switches).

5. In this connection, the *Notice* notes, and seeks comments upon, an allegation which has long been made by ILECs and their representatives – that the widespread availability of UNEs at rates based on the Commission’s “TELRIC” pricing standard operate only to inhibit facilities-based entry by CLECs and to prevent ILECs from making new investments, particularly in infrastructure required for broadband services. The allegation is that competition through UNEs – and particularly competition through the combinations of all authorized UNEs that is known as the UNE Platform (“UNE-P”) – serves no or few beneficial purposes, and that the ability of CLEC to obtain UNEs at TELRIC-based rates means that they will not invest in facilities of their own. Similarly, the allegation is that the requirement that ILECs make available facilities at these rates prevents or inhibits them from making investments.
6. For these reasons and other reasons, the *Notice* asks whether the Commission should adopt more “granular” and “targeted” rules that would purportedly thereby better

promote the goal of facilities investment by ILECs and CLECs alike. Such rules might exempt ILECs from the duty to provide UNEs if particular types of facilities were employed, if they were ordered in particular geographic locales, or if they were to be used to provide particular types of service. Related proposals would place time limits on CLECs' use of UNEs or would exempt all or some of the ILECs' "new" broadband infrastructure investment from the Act's unbundling requirements. These measures would be similar to the restrictions that the Commission previously imposed on the availability of unbundled switching and on loop-transport combinations (sometimes called "EELs").

7. As I explain in detail below, it is my view that the appropriate course for the Commission is to retain the existing national list of UNEs and to eliminate the existing restrictions that limit access to certain of these UNEs. First, while there has been significant investment in alternative facilities, there is no generic set of conditions today under which it is clear that CLECs can efficiently and profitably provide local service to any class of customers by obtaining loops, transport, or switching facilities from sources other than the ILEC. Under these conditions, the obligation to provide UNEs creates immediate benefits for consumers and not only fosters the future deployment of alternative facilities, but also is often essential for CLECs to make efficient use of switches and other facilities that they previously deployed.
8. Second, the existing restrictions on certain of the UNEs should be eliminated because however laudable were their purposes, the experience has shown that their effects have been to defeat the Act's objectives and the Commission's own stated policy of

encouraging facilities investment. Those restrictions have prevented service offerings that would have conferred substantial immediate benefits to consumers, and they have allowed incumbents anticompetitively to raise their rivals' costs by litigating the CLECs' entitlement to use UNEs on case-by-case bases. Beyond that, rather than foster facilities investment, the restrictions have prevented or inhibited it. Those restrictions have had the effects of allowing ILECs to engage in conduct that deprived CLECs who had made substantial facilities investments of the traffic needed to fill their facilities and of revenues that would help cover their costs – and they prevented CLECs from using switching facilities they had in fact already deployed. The restrictions thus contributed to the bankruptcies and difficulties that have plagued facilities-based CLECs, and they inhibit CLECs from raising the capital that would permit greater facilities investments in the future.

9. For these same reasons, the Commission should reject proposals that it adopt new “granular” restrictions that would effectively micromanage the conditions under which UNEs may be obtained and used. As demonstrated by the experience with the Commission’s three-line exception to the unbundled switching requirement, the factors that determine whether multiple CLECs who self provision facilities can in fact attract sufficient revenues and traffic to cover their costs are far too multifaceted and variable to be determined in advance by the Commission and codified in a regulatory rule. Because UNEs are clearly necessary in many conditions, any “granular” exceptions to a UNE obligation will almost inevitably have the effect of precluding the use of UNEs in conditions under which it is the only means of serving a class of customers today and of

deploying or using an alternative facility in the future. In addition, such exceptions embroil the Commission and the states in detailed and unnecessary regulation of CLECs and give the ILECs the ability anticompetitively to raise their rivals' costs through case-by-case litigation of whether particular requests for UNEs do or do not satisfy the actual or purported meaning of the Commission's rule.

10. Further, these restrictions would not advance the objective of fostering facilities investment. Both economic principles and experience demonstrate that CLECs will deploy and use alternative facilities as soon as that is economically and technically feasible, notwithstanding the availability of UNEs or UNE-P. Indeed, indications are that there has been greater facilities investment by *ILECs* as well as by CLECs in states that have more effective UNE-P competition or more attractive UNEs rates than in other States.
11. I believe that the only new requirement that the Commission should consider is one that would give ILECs' positive incentives to develop the operational arrangements that will enable "electronic" cutovers when new entrants seek to combine voice grade loops with their own switches. That would eliminate the need for "hot cuts" and other manual methods of transferring loops to CLEC switches which have severely impaired the development of switch-based competition. Similar measures were adopted to give long distance service entrants equal access to ILECs' local loops, and they represented a major step in the transformation of long distance services from a regulated monopoly to the competitive market that exists today. Indeed, the long distance market is testimony to the way in which unrestricted rights of nondiscriminatory access to incumbent facilities will

both foster competition that benefits consumers in the short run and foster investment in alternatives to incumbent's facilities wherever that is remotely economic. In addition, the long distance experience counsels that the Commission should be patient and should strive to maintain clear and certain rules without overreacting to self-serving claims of incumbents and to the experience of a five-year period during which attempts to implement clear and certain rules have been thwarted by constant disputes and litigation. Developing effective long distance competition was a far easier task. Yet it required over 10 years time, the exclusion of the major ILECs from long distance service, the imposition of electronic equal access requirements on all ILECs, and the use of means to give ILECs' economic incentives to implement equal access.

12. My views are based both on economic principles and on review of actual market experience of the past five years – including that set forth in the declarations of Stephen Huels, Ellyce Brenner and Michael Leshner and Robert Frontera of AT&T and other data which I summarize below.¹ Indeed, that experience has confirmed the economic testimony that I gave in 1999 and the Commission's findings in the *UNE Remand Order*, 15 FCC Rcd. 3696 (1999) that had relied on my testimony in substantial part. I believe that there are six overriding facts that are critical.
13. *First*, CLECs' efforts to compete with entrenched ILECs are inherently fragile. As I testified in 1999 and as the Commission found (*UNE Remand Order* ¶ 87), CLECs face inherent cost disadvantages and inherently greater risks and higher capital costs even

¹ For convenience, cites to other AT&T declarations follow the format specified in the glossary to AT&T's comments to which this declaration is attached.

where CLECs are able to obtain and use necessary network facilities at the same costs as the incumbent. The CLEC begins with no revenues and no customers; it must invest in operation support systems ("OSS") and back office systems; it must make marketing and retailing investments to try to overcome the ILECs' brand name and reputations for quality local service; and it must offer lower priced service, higher quality service, or some other form of differentiation from the ILEC. These factors mean that CLECs will be disproportionately affected by regulatory changes or ILEC conduct that increases the CLECs' costs, or that deprives them of revenues.

14. *Second*, as I testified in 1999 and as the Commission then found, the only alternative to UNE-P competition is often no competition. The economic reality is that – unless and until a CLEC obtains traffic volumes approaching the ILECs' – the economies of scale that characterize the ILECs' loop, switching, and transport facilities and their "first mover advantages" mean that an incumbent ILEC will have substantially lower unit costs than any CLEC in virtually all circumstances and dramatically lower unit costs (suggestive of natural monopolies) in all but relatively unusual circumstances.
15. Foremost, last mile and other local transmission facilities have natural monopoly characteristics. CLEC investment can realistically occur only in rare and exceptional circumstances in which there are point-to-point routes where sufficient traffic can be aggregated to afford the CLEC economies of scale comparable to the ILEC's and where the CLEC can obtain rights of way (for transport and loops) and access to buildings and advance customer commitments (for loops) that the ILEC received easily due to its first mover advantage.

16. Switching is characterized by not insignificant scale economies and it takes time (6-12 months) to deploy switches even if a CLEC has sufficient traffic volumes to obtain efficient scale in a centrally located switch. But, even then, unbundled switching is imperative today because of factors that prevent CLECs from connecting customers to these switches to local transmission facilities or that assure that CLECs have materially higher costs when they can do so. The design of the ILECs' networks and their hot cut and other operational practices impose enormous constraints on CLECs' ability timely to connect their customers to switches in the case of all voice grade loops, and I understand that the constraints are greater in the case of the very large and rapidly growing percentage of loops served by Digital Loop Carrier ("DLC") systems. Further, even when connections can be made, CLECs must incur materially higher costs than the ILECs because they must also incur distance-sensitive transport costs to deliver traffic to their centrally-located switches and then back to the ILEC central office – which are itself significant and which are magnified by the current unavailability of combinations of loops and high-capacity transport (also known as "EELs") and the need to collocate in each central office where loops of CLEC customers terminate.
17. *Third*, UNE-P competition is both real and beneficial. While rates in many states have foreclosed the use of UNE-P, it has provided important competitive alternatives in New York, Texas, and other states, has driven rates in these states closer to cost, and has offered consumers with alternatives and protection against rate increases that they would not otherwise have. And while UNE-P purchasers do not necessarily initially invest in transmission and switching facilities, they make substantial investments in support

systems and in marketing and related activities that benefit the economy and increase employment. Further, as explained below, UNE-P is often an essential precondition to deployment and use of alternatives to ILEC facilities, and the indications are that it leads to greater facilities investments by ILECs as well as by CLECs.

18. *Fourth*, there is no conflict between the requirement that UNEs and the UNE-P be made available at TELRIC-based rates and a policy of seeking to foster maximum facilities-based competition by CLECs and ILECs. Although the ILECs' UNEs are generally characterized by substantial economies of scale and although TELRIC represents the efficient replacement cost of a facility for the ILEC, I previously testified and the Commission previously found that CLECs will "deploy alternative facilities as soon as it is technically and economically possible to do so at a cost that is close to the incumbent ILECs' prices for network elements." *UNE Remand Order* ¶ 112; *see also id.* ¶ 7. That is so because CLECs incur other costs and disadvantages when they lease UNEs, and their effective overall unit costs can thus be lower when they build. In particular, CLECs then avoid the transactional, monitoring, litigation, and related costs of leasing from the ILEC; CLECs are not then dependent on their major competitors and potentially shifting perceptions of regulators for essential inputs; and CLECs who have deployed certain facilities (switching and databases) have the unlimited ability to differentiate their service from that provided by ILECs and to offer services that are superior to ILECs'.
19. Further, as I testified and as the Commission found in 1999, the availability of UNEs at TELRIC-based rates will foster future and broader-facilities investment by CLECs in loop, switching, or transport facilities and is often a necessary precondition to it. By

leasing network elements, a CLEC can build up traffic volumes that provide the information and minimum efficient scale required to fill the facilities and can obtain the stable revenues that enable CLECs to attract the capital required to build. Also, certain UNEs (loops and loop transport combination) most efficiently deliver the traffic that can help fill, and make economic, the switches that are self-provisioned. In this regard, the relationship between use of UNEs and use of alternative facilities has been quite direct. For example, where problems with hot cuts have precluded CLECs from initially serving newly-acquired customers on their existing switches, CLECs have used unbundled switching to serve customers initially and then moved them in mass to their own switches on a "project basis" – as explained in the Declaration of Ellyce Brenner.

20. Indeed, despite the facts that generally give the ILECs' exchange natural monopoly characteristics, CLECs have made transmission and switching investments that are substantial and extraordinary by almost any measure – except, of course, as compared to the more than \$180 billion that would be required to duplicate the ILECs' local networks. Rather than being inhibited from making facilities investments, it appears quite clear – with the benefit of hindsight – that CLECs prematurely made far greater investments in alternative facilities than were warranted. There is a vast array of CLECs who made investments in varieties of types of telecommunications facilities and who, quite simply, were not able to fill the facilities with traffic that generated sufficient revenues to cover the costs of the facilities and the CLECs' related support costs and investment. That is most dramatically the case with the long and growing list of CLECs who have petitioned for bankruptcy protection or who have been liquidated in bankruptcy. Similarly, the

evidence – set forth in the Lesher-Frontera Declaration – is that AT&T's substantial local switching and local transmission facilities are underutilized.

21. While it may be the case that some of these CLECs underestimated the costs of establishing alternative facilities or had business plans that could not have succeeded under any set of facts, it also appears certain – again with the benefit of hindsight – that a factor that contributed to the underutilization of and stranding of the CLEC facilities investments were changes that the Commission made in its rules over the last three years in response to ILEC claims that such changes would foster greater investment. The limitations on the rights to use loop-transport combinations, the effective denial of access to the full capacity of loops served by Digital Subscriber Line Access Multiplexers (“DSLAMs”) in remote terminals, and the changes in the reciprocal compensation rules all deprived CLECs of traffic that would help fill their switching and other facilities and provide the revenues required to cover their operational and capital costs and to attract further capital. Similarly, because the ILECs' hot cut practices precluded CLECs from efficiently connecting customers to switches at the time they initiated service, the effect of the three-line limit on unbundled switching in high density areas has been to preclude competition for many of these customers. This is because, in the absence of reliable hot cuts, the only way for CLECs to compete on a facilities basis is to place customers on UNE-P initially and then move them in bulk to their switches later on a “project” basis. The three-line limit, however, denies CLECs the ability to use UNE-P to serve many potential customers.
22. *Fifth*, ILECs obviously do not want effective competition with their networks. They will

attempt to exploit any exception to unbundling requirements that the Commission establishes and use it to destroy the fragile economics of CLECs' operations. Because of the complex web of interrelated factors that affect the costs and revenues of CLECs, ILECs have been able to carry out these stratagems in ways that were not foreseen at the time the Commission imposed its current restrictions on the availability of certain UNEs. In this regard, the ILECs' current proposed restrictions to UNEs are a response to the reality that UNEs offer the best hope both for some form of immediate competition with ILECs and for the future full or partial facilities based competition that can provide the greatest benefits to consumers and that represents the greatest threat to the incumbents. Where ILECs contend that particular rules will best foster effective facilities-based competition, the Commission should approach those claims with extreme skepticism and presume that, if anything, the ILECs' proposals will have precisely the opposite effect.

23. *Finally*, the requirement that UNEs be made available at TELRIC-based rates has no significant adverse effect on ILECs' incentives to invest and, if anything, will lead to greater and broader ILEC investment. As monopolists, ILECs will withhold investments that will undercut the value of current investments, but they will invest to achieve efficiencies and savings in existing services, to respond to intermodal competition (*e.g.*, from cable modem services), or to respond to actual or threatened "intramodal" competition from CLECs who rely on alternatives to ILEC facilities in whole or in part. In any event, TELRIC would fully compensate ILECs for all risks incurred in making investments in whatever different classes of facilities they deploy, be they voice grade loops, DSL-capable, or "fiber to the curb" loops.

24. UNE-P competition should foster facilities investment by CLECs and ILECs alike. The data suggest that, if anything, the rate of CLEC activity is higher in states where there have been relatively low UNE-P rates that led to widespread use of this entry vehicle (*e.g.*, New York) than in states in which there has been no or virtually no use of UNE-P to date (*e.g.*, California). Similarly, presumably because ILECs recognize the way in which effective UNE-based competition leads to facilities investment by CLECs, indications are that, if anything, the ILECs' rate of per-line investment in their networks is greater in the states where UNE rates would allow more effective competition than it is in other states.
25. The ILEC contentions that UNEs suppress investment have focused on broadband, and have, in my view, quite inappropriately asked the Commission to treat broadband separately from the full range of services that can be provided over ILECs' networks. But these claims, to my mind, likely would be empirically false even if broadband were viewed in isolation. The duty to provide access to UNEs at TELRIC-based rates is unlikely to have a significant adverse effects on ILEC infrastructure investment in today's setting. First, TELRIC affords an ILEC a full market-based return that reflects all the risks that the ILEC incurs in making these investments, and CLECs who offer DSL-based services pay the full economic cost of the facilities that they lease. Second, ILECs' broadband investments are driven by other factors. Absent market pressures, ILECs are not likely to make aggressive broadband investments for they undermine the ILECs' second-line revenues and the value of their existing networks. In this regard, after initially failing to make investments that would allow DSL-based services to be offered

more broadly and more efficiently over ILEC facilities – even where the investment would pay for itself by reducing maintenance and related costs in the provisioning of voice services – ILECs made the investments when cable modem competition began threatening their second-line revenues.

26. Conversely, the unbundling requirements affirmatively fostered CLEC investments in the electronics (*e.g.*, DSLAMs and packet switches) that transform DSL-capable loops into broadband facilities and into DSL-based service. Indeed, since the demise of the leading data CLECs last year and the end of full reciprocal compensation payments for ISP-bound traffic, ILECs have increased their high speed Internet access rates 25%, such that they significantly exceed cable modem rates. There is thus powerful evidence that the unbundling requirements have led to the broader availability of broadband at lower prices to consumers. Further, any restriction on unbundling obligations for broadband would foreclose competition for voice as well as high speed data services, for ILECs would monopolize the substantial and growing number of customers who want to obtain broadband and narrowband voice from a single source and prevent offerings – such as those planned by AT&T – in which it would offer second or third voice lines over the high frequency portion of loops.

27. These are the reasons that I believe the Commission should maintain its existing list of UNEs and eliminate the existing use and other restrictions on their availability. This is not to say that there are no conditions under which it could be permissible in the future to adopt exceptions to the requirement that particular UNEs be made available. In my view, it would be appropriate for the Commission to restrict or end the availability of a UNE if

(1) market experience over a sustained period of time demonstrates that there are generic conditions under which multiple CLECs can economically and profitably provide service to a broad class of customers by obtaining the facility outside the ILECs' network and (2) the restriction would not enable ILECs to engage in litigation or other conduct that would anticompetitively increase the costs of CLECs and jeopardize their inherently fragile efforts to compete with entrenched incumbent monopolists.

28. However, it is quite clear that today there is no generic set of such conditions that can be expressed as a rule for either the loop, transport, or switching elements. In the case of loops, it is only conceivable to self-provision them to high volume customers in dense central business districts, but the practical ability to do so exists under only the exceptional conditions in which there are no right of way problems, in which there are no building access problems, and in which customers are willing to make commitments that will continue to apply during the substantial period in which the loops are to be constructed. And even then, the CLEC has to displace an ILEC that has a "sunk" investment in a working loop to the customer (which can be upgraded to meet any additional or new customer requirements at a very low incremental cost). In the case of transport, the self-provisioning is feasible only on relatively exceptional routes (*e.g.*, from certain end offices to an interexchange carrier point of presence) where substantial amounts of traffic can be aggregated. But even here, right of way issues can preclude the competitive provision of transport on any route – regardless of its density – and the construction of the facilities takes significant time even after rights of way are obtained. There is thus no level of traffic or generic set of conditions for which the self-

provisioning of loops or transport is or can be presumed to be economic and practical.

29. In the case of switching, it appears (1) that unless EELs are available at cost-based rates, initial and ongoing collocation costs will often preclude economic use of previously-installed switches for even larger business customers in densest areas of the largest cities; (2) that even where EELs are available, CLECs will be today impaired in their ability to serve all such customers with voice grade loops if they cannot use unbundled switching to avoid the costs, inefficiencies, and service problems that have occurred with manual hot cuts; and (3) that even if manual hot cuts were performed flawlessly and economically for voice grade loops, there are added provisioning costs and difficulties associated with provisioning the large and rapidly growing percentage of loops served by DLC. The actual market experience is that AT&T had initially planned to serve business customers exclusively through self-provisioned switches, but that hot cut costs and problems made its strategy infeasible. AT&T thus now uses UNE-P to place customers on voice grade loops initially and, where economic and feasible, then transfers them to its own switch (along with other customers) in mass thereafter on a project basis.
30. If ILECs were to deploy efficient and economic electronic loop assignment methods that overcame the hot cuts and DLC provisioning problems, that would undoubtedly allow self-provisioned switches to be used much more broadly. However, an active wholesale switching market – with sufficient capacity to serve CLEC needs and to discipline ILECs – not only requires customers can freely move loops among networks (as electronic loop provisioning would allow), but also requires cost effective transport to be ubiquitously available to connect switches (such as cost-based EELs that allow CLECs to

connect switches to customers without having to incur the significant fixed and recurring costs of collocation). And even if these conditions are met, CLECs who self-provision switches may face substantially higher unit costs than ILECs due to the significant fixed costs of switches, the distance-sensitive transport costs that CLECs incur, the customer volumes required to justify switch deployment, and the time required to deploy switches. It would be premature to find that CLECs would not be impaired if required to self-provision switching until it is known whether these factors are significant. In short, electronic loop provisioning is a necessary, but not a sufficient, condition for removing switching from the list of UNEs.

31. Nor is there any sound basis for the other proposals for greater "granularity." These appear to relate primarily to attempts to provide ILECs with incentive to invest in broadband technology by exempting, for example, "new" investments in DSL-capable loops or "fiber to the home" from the unbundling requirements. The notion, apparently, is that the duty to offer such enhanced loops at TELRIC-based rates would, to some extent, limit the return that ILECs earn on these investments and that ILECs need unbounded returns to invest in broadband. But TELRIC requires that rates be set at levels that allow the ILEC to earn a return that reflects all the risks of making investments to provide higher levels of bandwidth as other enhanced capabilities, and the requirement that all carriers also obtain these facilities do so at their full economic costs maximizes investment in broadband and use of the transmission facilities that ILECs deploy. Indeed, as noted above, unbundling obligations have had no adverse effect on ILECs' broadband related investments and appear to have quite clearly led to greater availability

and use of broadband by consumers.

32. In sharp contrast, a rule that eliminated an unbundling obligation on “new” ILEC infrastructure investments would demonstrably foreclose competition in broadband and voice services alike. Any notion that CLECs and ILECs have the same ability to make new such investments is simply unsustainable. When ILECs make broadband infrastructure investments, they are a replacement of part of (or an overlay on top of) the existing networks, and the ILECs have the same economies of scale and first mover advantages in deploying purportedly “new” facilities as they do in the rest of their networks. These “new” facilities thus cannot economically be replicated by CLECs, and a rule that barred ILECs from accessing the ILECs’ “new” facilities would enhance the ILECs’ market power and prevent competition not just in broadband, but in packages of voice and data services as well.
33. Finally, the ILECs have also hinted at the most extreme claim of all. They appear to assert that the Commission should jettison UNEs altogether on the theory that the only competition to ILECs that matters is “intermodal” competition from multiple competing platforms that do not use landline local loops at all. But some of the hoped for alternatives (*e.g.*, fixed wireless) have been attempted and to date failed. While cable telephony appears promising, it is being deployed in only certain areas; it provides alternatives for residential customers, and even when successful, it creates only one alternative to the ILEC – a result that is clearly insufficient to ensure reasonable choice for consumers. It is sheer speculation whether or when multiple non-local loop based platforms could ever develop, and it may well be that the best hope for exchange

competition in the long run as well as the present is the deployment by multiple CLECs of competing switch-based "platforms" that all use the local loop and transport infrastructure. In any event, UNE-P and UNE-L competition provide immediate benefits, are preconditions to facilities investments, and will have no adverse effect on the establishment of alternative non-loop-based "platforms" if and when they are economic.

34. The remainder of my affidavit attempts to address the issues raised in the Notice comprehensively. Much of this discussion (particularly in Parts III-V) was largely contained in my 1999 testimony and accepted in the Commission's *UNE Remand Order*.
35. Part III discusses the basic economics of the CLEC and the conditions that must exist for CLECs to have opportunities to attract capital and succeed in providing effective competition with ILECs in those aspects of the local exchange where competition is economically and technically feasible. It discusses the risks and inherent disadvantages that CLECs face, and the factors that will cause CLECs to construct alternative facilities whenever they can do so at economic costs that are close to the TELRIC rates.
36. Part IV discusses the basic economies of the local exchange and the scale economies and first mover advantages that mean that most of the local exchange has natural monopoly characteristics and that give ILECs inherent cost and other advantages in providing facilities in virtually all circumstances.
37. Part V discusses the ways in which the availability of UNEs benefits consumers in the short run, provides traffic and revenues that support existing facilities, and allows CLECs to attract capital and satisfy other preconditions for future facilities investments.

38. Part VI explains how actual marketplace experience of CLECs and AT&T shows that UNEs do not inhibit investment by CLECs or by ILECs. It also discusses the underutilization of these facilities and business failures of CLECs, and it explains how restrictions on the availability of UNEs has caused or contributed to these difficulties.
39. Part VII explains why the existing list of UNEs should be maintained, why existing restrictions on the availability of UNEs should be removed, and why other proposals for more “granular” and “targeted” rules are unsound. It also discusses the appropriateness of giving ILECs incentive to solve the hot cut problem by implementing electronic loop cutovers.
40. Part VIII addresses the set of issues raised related to broadband. It shows why obligations that fully functional loops be made available at TELRIC-based rates will not inhibit ILEC investments in loop infrastructure, why that will foster greater overall investments in broadband, and why exceptions for broadband facilities will inherently foreclose beneficial competition in narrowband and broadband alike.
41. Part IX briefly discusses the claim that UNEs should be jettisoned and that the Commission should rely instead on the prospects of intermodal competition with ILECs from alternative platforms that do not rely on local loops and transmission facilities at all.
42. Finally, Part X discusses experience in the long distance market and how it teaches that the Commission must be patient and recognize that while various forms of local competition are possible, it will require strict rules and sustained efforts by the Commission over a period of many years before the competition can develop in the face

of the ILECs' powerful incentives and ability to thwart it.

III. CLECS FACE COST DISADVANTAGES IN COMPETING WITH ILECS AND WILL DEPLOY ALTERNATIVE FACILITIES AS SOON AS ECONOMICALLY AND TECHNICALLY FEASIBLE.

43. Like other economists, I agree regulation should not significantly favor one competitor or one group of competitors. Regulation should be designed and implemented in a manner that favors competition, *i.e.*, that inures to the benefit of consumers. Local telecommunications services have been and remain exceptionally resistant to competition. Incumbent LECs continue to have a virtual monopoly on the provision of certain basic telecommunications services and they continue to control key assets (the core components of local telecommunications networks) that are necessary to deliver these services to the public. They also enjoy substantial non-tangible advantages over possible rivals in the provision of such services.
44. Competition cannot be achieved and cannot deliver its projected benefits if actual or potential competitors are placed at substantial competitive disadvantage against the monopoly incumbents. CLEC disadvantages arise not as the result of sloth, incompetence, or lack of foresight, but because of the exceptional confluence of legal, historic, and economic forces that have made broad-scale competition virtually impossible. Those forces primarily grew out of legal impediments to entry and substantial economic barriers to entry. The barriers to entry arose from first-mover advantages and from large fixed and sunk costs associated with investments in the network and with elements of natural monopoly in some portions of the local network. These forces have prevented potential rivals from competing with incumbent LECs, and

regulatory entry barriers further allowed the incumbents to entrench their market position.

45. It is a matter of fundamental economic principles that price competition will drive a relatively high cost firm out of a market. If a firm has higher costs than its rivals, the natural competitive process inevitably will propel prices below the costs of the high-cost firm, forcing it to exit the market. Moreover, a rational CLEC will anticipate the outcome of the competitive process and if it knows it would have materially higher costs than the incumbent LEC in a particular market, it simply will choose not to commit its liquid capital to enter that market. A CLEC will enter a particular market only if it anticipates that its overall costs will not significantly exceed those of the incumbent LEC for a similarly desirable product and only if it can acquire revenues to cover those costs. To the extent CLECs incur greater costs than ILECs in acquiring certain inputs to a service, they will enter and remain in the market only if they believe they would achieve offsetting efficiencies in other areas and would earn revenues that cover their overall operating and capital costs.
46. CLECs will have to overcome certain inherent disadvantages even if they use UNE-P initially, and CLECs will deploy their own alternative facilities as soon as they can do so at an economic cost close to the price that the ILEC charges for the UNE.
47. First, as I testified in 1999 and as the Commission then found (*UNE Remand Order* ¶ 87), there are myriad respects in which CLECs will inherently face greater operating and capital costs than an ILEC even if the CLEC were assured that it could in fact obtain all the necessary network facilities at the same economic costs as the ILEC through UNEs. CLECs even then would have to make investments in systems and marketing that are

greater on a per customer basis than those of its ILEC competitors, and the CLECs would have to make these investments in a context in which they have no revenues, in which they have to overcome the relationships that entrenched monopolists have with customers, and in which they would have to underprice the ILEC to win business.

48. For example, the CLEC would have to incur a number of one-time entry and "setup" costs that the incumbent LEC incurred in the deep past, that have already been covered by monopoly ratepayers, and that no longer are fully reflected in the regulated prices charged to today's ratepayers. These setup costs include the expenditures for the creation of back-office systems for billing, network provisioning and control, and customer service. *See UNE Remand Order* ¶ 87. These back office facilities are "essential to the provision of local exchange services to a broad base of residential and business customers." *Ameritech-SBC Merger Order*, 14 FCC Rcd. 14712 ¶ 84 (1999). A corporate management hierarchy for both network and retail operations must be established as well. And, of course, a CLEC must create a brand image that applies to local services, and invest heavily in marketing in order to dislodge customers from the incumbent.
49. An entrant also lacks the incumbent's knowledge about local operating conditions. CLECs must gain the "know how" to design, deploy, provision, manage and repair modern telecommunications services. *See Ameritech-SBC Merger Order* ¶¶ 73, 84; *Bell Atlantic-NYNEX Merger Order*, 12 FCC Rcd. 19985, ¶¶ 61-62 (1997). This includes differences in local operating costs (*e.g.*, location and quality of outside plant facilities) and consumer demand (*e.g.*, peak traffic volumes over certain facilities and demand

growth). This “intimate knowledge of local telephone operations,” while vital to the ability to provide quality phone service, cannot be “quickly duplicated by smaller market participants, such as cable operators and CAPs.” *Id.* ¶ 107. This information asymmetry increases the risk that the CLEC will fail to deploy facilities optimally and therefore increases the overall risk of entering the local telecommunications business. *See generally UNE Remand Order* ¶ 87.

50. CLECs must market their services in competition with ILECs that have “strong brand recognition” for being able to provide quality and reliable service and longstanding customers relationships. *See Ameritech Michigan 271 Order*, 12 FCC Rcd. 20543, ¶ 15 (1997); *Ameritech-SBC Merger Order* ¶¶ 73, 81, 85; *Bell Atlantic-NYNEX Merger Order* ¶¶ 61-62, 106-07. Thus, even if they can successfully replicate technical expertise and back office systems, CLECs still must spend significant sums to market their services, develop a brand and convince consumers to switch from their incumbent provider, and to “overcome” the relationships that the ILEC has.² *UNE Remand Order* ¶ 87. This is particularly a formidable challenge given the critical importance most consumers and businesses place on telecommunications services and their unwillingness to risk service interruptions. CLECs will thus need to spend much more per customer on marketing efforts to win customers away from incumbent LECs, and will generally also have to underprice the ILEC to obtain business. *See UNE Remand Order* ¶ 87.

² Even in the case where a CLEC has a longstanding relationship with the customer (*e.g.*, because the CLEC has been the customer’s long distance provider), this relationship needs to be extended to local services. Moreover, many commercial customers may be under long-term contracts with termination penalties that further increase the costs of a CLEC competing for their business.

51. For these and other reasons, CLECs have higher risks, and capital costs, than the incumbent LECs. Entering as a new competitor into a monopolized market in which there are heavy sunk costs is inherently riskier than being the monopoly provider in that market. Investors will be unsure about whether or not a CLEC can overcome the incumbent LEC's brand name recognition and longstanding customer relationships, and as a result, will require expected returns from successful CLEC entry investments to exceed an incumbent's hurdle rate. The competition brought into the market by the CLEC will likely push prices down, in ways never before experienced in those markets. And even with UNEs available, the entering CLEC will nevertheless need to expend significant sunk costs that will immediately be put at risk.
52. Second, as the Commission found in 1999, while multiple CLECs cannot provide service broadly without use of UNEs, CLECs will obtain necessary facilities from sources other than ILECs as soon as they can thereby deploy and use them at economic costs that are even close to the costs it incurs in obtaining a UNE at cost based rates. *UNE Remand Order* ¶ 112. This is so notwithstanding that TELRIC requires that network elements be priced based on costs that ILECs would efficiently incur in replicating the facilities to serve the entire existing demand. The reality is that CLECs incur other costs and disadvantages wherever they obtain UNEs from the ILEC, and that when the economics of self-supply of UNEs are even close, avoiding these other costs will make self-provisioning the obvious and clear choice for a CLEC.
53. UNE purchasers incur enormous transaction costs. They must periodically negotiate, and litigate, with a monopolist who has the incentive and ability to provide access to UNEs

on the least favorable terms possible and to fight the CLEC every step of the way in arbitrating interconnection agreements and in the Commission proceedings that establish the governing rules.

54. Further, even after it secures rights of access on particular terms, the CLEC incurs monitoring costs, for the ILEC has the ability and incentive to discriminate in the implementation of the agreement. CLECs will need to bear substantial costs in monitoring and litigating before courts and regulatory agencies to ensure that incumbent LECs behave in a nondiscriminatory, pro-competitive manner.
55. In addition, a CLEC relying on UNEs faces unusually high strategic risks because, when it orders UNEs, it effectively discloses to its dominant rival competitively sensitive information. The incumbent LEC can determine where the competitor intends to offer services (*e.g.*, from requests for collocation space) and how successful different service offerings have been for the CLEC (*e.g.*, based on local switching usage). Literally on a daily basis, a UNE purchaser divulges strategic information about its competitive initiatives and successes to its most formidable opponent, information that might be used by the incumbent LEC to shape effective competitive responses.
56. Also, a CLEC who relies on UNE-P has little ability to differentiate itself from the ILEC by allowing services with different transmission features. Rather, it is generally limited to offering the same local service features as do the ILECs and can differentiate itself only in packaging and pricing the features or in its customer service. By contrast, whereas loops and transport provide little capacity for service differentiation, firms who deploy their own switches and associated databases have the ability to offer unique

features.

57. Finally, CLECs who rely on UNEs bear costs of uncertainty. They are in a position in which ILECs are constantly urging regulators to eliminate obligations to provide UNEs or to impose use or other restrictions on them – and when the Commission has granted those requests, CLECs have been substantially harmed. The inability to depend on the availability of necessary facilities at competitive rates imposes substantial costs.

IV. THE ECONOMICS OF THE LOCAL EXCHANGE MEAN THAT CLECS GENERALLY CANNOT ECONOMICALLY DEPLOY ALTERNATIVE FACILITIES AND THAT WHERE THEY CAN, IT CAN REQUIRE SUBSTANTIAL TIME AND RELIANCE ON UNES TO DO SO.

58. As I testified in 1999 and as the Commission then found, the economics of exchange services are such that it is generally the case that the only alternative to competition through UNEs is no competition. ILECs generally enjoy scale economies and first mover advantages that are so great that CLECs can never incur costs that are close to the ILECs – unless and until a CLEC could achieve traffic volumes approaching the ILECs on particular facilities.
59. In particular, it is the case that CLECs could deploy loop and transport facilities at economic costs that are close to the ILECs' only in exceptional conditions. Although CLECs could potentially economically deploy switches in a broad array of situations, CLECs cannot economically use switches today because of the high costs (both direct and indirect) of connecting them to unbundled loops. These conditions will persist at least until ILECs (1) develop operational methods of moving loops from their switches to those of CLECs at low costs and without delays and risks of service outages – which

today requires use of unbundled switching during interim periods – and (2) make high capacity transport (*i.e.*, EELs) available. Thus, while intramodal competition through self-provisioned switches holds great promise, the availability of unbundled switching and other UNEs is a necessary condition to making these potentially beneficial arrangements broadly available.

60. At the outset, it is important to distinguish the factors that give ILECs inherent cost advantages in deploying and using telecommunications facilities: economies of scale, first mover advantages that are classic entry barriers, and assembly costs.
61. *Scale and Scope Economies.* Because ILEC local networks are ubiquitous and network costs are largely fixed or sunk, ILECs enjoy substantial economies of scale and scope that allow them to offer service at a materially lower cost than any new entrant. The size of the market served by the incumbent means that the incumbent can enjoy significantly lower average costs per subscriber served than an entrant who must incur many of the same fixed costs but who likely will serve a much smaller market, at least initially. Further, these scale and scope economies are associated both with network operations and retail services. Obviously, then, a CLEC will have higher costs than the incumbent LEC unless it can achieve similar scale and scope economies.
62. *First Mover Advantages.* In addition to these substantial cost advantages, ILECs also enjoy first mover advantages – that is those competitive advantages associated with being the first company to enter a local telecommunications market. For example, as first movers, ILECs received rights of way from local governments for underground cables and telephone poles and wires with only minimal transaction costs, for persons in the

neighborhood or municipality otherwise would not receive *any* telecommunications services. Similarly, building owners and landlords welcomed and accommodated the ILEC that promised to bring, for the first time, telecommunications facilities to a building.

63. But subsequent entrants do not have these first mover advantages. CLECs often incur substantial transactional costs – in some cases, discriminatory higher charges – and delays in getting rights-of-way, as local governments balance any negative impacts of new rights-of-way applications (such as in the form of disruption of traffic) with the benefits not of initial telecommunications service, but of simply additional competition. CLECs must also negotiate access on a building-by-building basis, often faced with building owners who may see little additional value to their buildings from a second or third service provider. Further, whereas ILECs entered markets with no competitors and today, as a result, have facilities in place to serve all customers, CLECs must deploy them based on projections or speculation that there will be demand for such facilities – demand which, even under the best of circumstances, takes time to build. The additional transaction costs borne by CLECs today are classic entry barriers – that is, they are costs that the ILECs as first movers never had to bear.
64. *Assemblage Costs.* Assemblage costs are costs borne by the CLEC when it mixes its own facilities with unbundled network elements. Obviously, these costs also can asymmetrically inflate CLEC costs above those incurred by the incumbent LEC. For example, when the CLEC leases unbundled loops, but deploys its own switch, the CLEC incurs significant “backhaul” costs to bring the customer’s loop from the incumbent

LEC's wire center to the CLEC's switch. These costs again represent classic entry barriers; the incumbent LEC never incurs these costs because its loops terminate at its local switch.

65. A CLEC may be unable to achieve the ILEC's scale economies even if (because of its activities in other telecommunications markets) it could purchase the same equipment at the same prices as the incumbent LEC. Even if the TELRIC (total rather than per-unit costs) a CLEC incurs when it self-provisions a network element were no higher than the ILEC's TELRIC of providing that network element, which is unlikely to be the case, the CLEC's lack of an equivalent local traffic base will cause its per-unit TELRIC costs of self-providing the element to be much higher than the ILEC's. Further, if it were the case that per-unit TELRIC for a network element was the same under self-provisioning and purchasing the element from the ILEC, the CLEC still could be at a disadvantage due to assemblage costs.
66. The economics of the local exchange that I have just described affect the various components of the local network differently. I will now describe, in particular, how loops, transport and switching are affected.
67. *Loops.* The foregoing economic facts mean that alternatives to ILEC-provided local loops can exist only in exceptional circumstances. The loop includes very costly structures, such as poles, conduits and trenches, that support the cable connecting the end user to a wire center. These structures entail a very large fixed cost because, in order to serve a particular neighborhood, poles must be placed or trenches must be dug regardless of the number of subscribers in that neighborhood. Under these circumstances, unit costs

decrease as the number of subscribers increases or as the distance to reach each subscriber or group of subscribers decreases. ILECs currently have virtually all subscribers attached to their loop plants, and thus have a relatively large number of subscribers over which the fixed cost of their loop plants are spread. It is difficult, if not impossible, for new entrants profitably to overbuild the existing telephone network, because a new entrant typically has very few customers, at least initially, from which the same fixed costs may be recovered.

68. The economies of scale in the provision of ordinary copper loops are such that even a CLEC with a 30% share of traffic in any area would incur per-line loop investment costs that are 45% to 70% higher than the costs incurred by ILECs. *See* Clarke Dec., Part V. Given these economics, the deployment of alternative loops is thinkable only in the case of a high capacity loop used to serve concentrated demand existing at small numbers of location that are in close proximity to deployed fiber transport facilities. But even as to these customers, ILECs here enjoy the first mover advantages – the receipt of automatic rights of way, building access, and connections to all customers – that mean that, as a practical matter, CLECs will be able to construct and deploy high capacity loops in dense areas only in exceptional circumstances.
69. *Transport.* Transport facilities are similar in many ways to loop facilities. They both consist of cables supported by poles or buried in trenches or pulled through buried conduit. For both transport facilities and loop facilities, the source of economies of scale are primarily in the fixed costs of support structures, although the transmission media and electronics are themselves characterized by not insignificant scale economies. With

transport facilities, just as with loops, structure costs vary directly with distance; the greater the distance to be covered, the more poles or feet of trench or feet of conduit are required. Thus, for any given amount of traffic, the cost per unit of traffic will be lower where large amounts of traffic can be aggregated and carried a short distance than in areas where smaller amounts of traffic must be carried for longer distances. *See Clarke Dec., Part V* (documenting economies of scale for transmission facilities).

70. Within a local exchange area, the ILECs have switches located in each wire center. This provides the ILECs with a number of cost advantages that will not be available to new entrants. For example, a large proportion of traffic in the local exchange network originates and terminates within the same central office. This intraoffice traffic need not be transported. Intraoffice traffic is, for this reason, less costly than interoffice traffic. For the CLEC, which will not initially have switches in each wire center, all traffic must be transported, even traffic originating and terminating in the same wire center, and thus will be more costly. In constructing its network, therefore, the CLEC must size its transport facilities to carry all traffic while the ILEC need only size its network for that fraction of traffic that is interoffice in nature. Further, ILECs have both interoffice facilities and loop facilities throughout the local exchange area. As a result, at least a portion of the structure costs of interoffice facilities and loop facilities may be shared, thus reducing the unit costs of structure for both loops and transport. This opportunity for cost savings will not initially be available to the CLEC, and may not be available at all depending on whether the CLEC can profitably overbuild the incumbent's loop facilities.
71. Under these circumstances, economies of scale with respect to transport are so great that

third parties can provide these connections only on exceptional routes where large amounts of traffic can be aggregated *and* where CLECs can acquire rights of way.³

72. *Switching.* Although it is very difficult to quantify the relative proportions of fixed and variable costs within the switch because information on the actual prices paid by local exchange companies for switches is generally confidential, available data demonstrate that fixed costs are a very large portion of the cost of the switch, and thus that switching is subject to significant economies of scale. *See* Clarke Dec., Part V. In addition to the cost of the switch itself, several items that support the switch also have costs that do not predominantly vary with volume. These include the cost of the building housing the switch, the cost of power and air conditioning, and certain test equipment. The basic cost of software used to operate the switch also does not vary with usage, and this can be a significant and recurring cost over the life of the switch. For all these reasons, the Commission found that switching is characterized by not insignificant scale economies that give CLECs material cost disadvantages. *UNE Remand Order* ¶ 260.

73. At the same time, scale economies are potentially less significant in switching than for loops and transport, and CLECs have special incentives to provide their own switches because switches (unlike loops and transport) allow service differentiation and because switches can be moved after they are deployed in one locale (such that their costs are not

³ Even then, self-deployment of fiber may not be economic for routes where the ILEC already has dark fiber in the ground. The cost to the ILEC of "lighting" existing fiber strands is negligible compared to the costs incurred by the CLEC in initially deploying fiber. In such circumstances, the CLEC knows that the ILEC could profitably undercut its prices should it attempt to self-deploy fiber.

entirely sunk). In addition, although ILECs have inherently far more traffic than any CLEC, CLECs potentially have the ability to achieve economies in the operation of the switch that substantially mitigate the ILEC's advantages by deploying a single switch to serve an area that is served by multiple (*e.g.*, 10-15) ILEC switches, by leasing unbundled loops, and by obtaining transport facilities to connect the loops to the centrally-located CLEC switch. *Id.* ¶ 261. However, operational difficulties make it very difficult for CLECs to achieve these potential scale economies. CLECs must be able to acquire customers and aggregate demand from those customers at the switch. But existing hot cut processes do not allow CLECs to gain access to customer loops and EELs are not available to connect customers to switches. Further, in self-deploying switching, the CLEC incurs other delays and costs that the ILEC does not. It must collocate in each office where it leases loops (if EELs are not available) and it must incur distance-sensitive transport costs. As the Commission found, these added costs generally preclude a CLEC from using self-provisioned switches to serve all customers. *UNE Remand Order* ¶¶ 262-67, 270-71.

74. Indeed, the Commission believed that CLECs would be certain to be able economically to use self-provisioned switches only to serve business customers with four or more lines that are located in densest areas of the largest 50 MSAs if the LEC provides EELs. *Id.* ¶¶ 276-98. However, actual market experience has demonstrated that this finding was incorrect in the case of all customers who use voice grade loops and who thus require "hot cuts" at the time the customer's service is cut over to the CLEC. As explained in the Brenner Declaration, the hot cut and other problems with connecting voice grade loops

have been so severe that AT&T has abandoned its strategy of serving these customers exclusively through self-provisioned switches and leased unbundled loops. Instead, at great expense, AT&T began using UNE-P to serve the business customers with voice grade loops and AT&T's plan is to transfer large groups of customers from an ILEC switch to a CLEC switch on a project basis when ILECs have demonstrated the ability to do so. Finally, while there are other potentially electronic alternatives to manual hot cuts, no ILEC has deployed them.

V. UNE-P COMPETITION REQUIRES SUBSTANTIAL INVESTMENT, PROVIDES BENEFITS TO CONSUMERS, AND WILL LEAD TO INVESTMENT IN ALTERNATIVES TO NETWORK FACILITIES.

75. The ILECs' proposal to impose "granular" and "targeted" restrictions on the availability of UNEs, in whole or in substantial part, attempts to impose artificial restrictions on the availability of the UNE-Platform – where CLECs provide service through existing or assembled combinations of the six currently-authorized UNEs (network interface device, loop, switch, transport, signaling & OSS). The underlying claim is that UNE-P competition is not real competition that provides genuine benefits to the public in the short run and the availability of UNE-P causes CLECs to refrain from making investments that will allow more beneficial forms of competition to emerge in the long run.
76. These claims do not withstand analysis. UNE-P competition requires substantial investments and will drive prices for local services closer to economic cost, thereby lessening the ability of ILECs to exercise market power. Second, because of the basic economies of the CLECs' business, the reality is that UNE-P competition generally will

occur only in circumstances in which the only alternative for the CLEC is no competition – either because substitution of alternative facilities by the CLEC is economically and technically impossible or because it will not be possible until the CLEC has built up necessary traffic volumes, acquired necessary information on traffic patterns, or completed the often lengthy process of deploying its own alternatives to some of the ILECs' facilities. Rather than suppress investment in alternative facilities, UNE-P can foster it and is often an essential precondition to it.

77. The ILECs' make their contrary suggestions by quoting Justice Breyer's observation in *Iowa Utilities Board* that in circumstances where sharing obligations are imposed, competition genuinely occurs only in the "unshared portions of an enterprise." This observation is typically accurate as an abstraction. But its application here ignores that the "shared" part of the enterprise in a UNE-P arrangement is limited to certain network facilities. UNE-P purchasers provide other network functions (*e.g.*, OS/DA), and just as importantly, they perform the back office, retail, and customer care functions of pricing and packaging the services provided through UNE inputs and of marketing and delivering them to customers.
78. UNE-P providers thus create alternatives to ILEC facilities, for the CLEC must establish an entire retail operation. It must create back-office systems for billing, network provisioning and control, and it must establish a customer service operation. Also, the CLEC must create a brand image and invest heavily in marketing. Each aspect of its retail operations requires substantial value-added, and stimulates the economy in this way as well.

79. But far more important than the magnitude of the UNE-P investments are the benefits that these investments create for consumers. Even if UNE-P competition did not lead to investment in loop, transport, and switching facilities, consumers derive extraordinary benefits from a regime in which multiple providers obtain these essential monopoly inputs at their economic costs and compete in the retail functions of packaging, pricing, and delivering the exchange and exchange access services to their ultimate consumers. CLECs use their own back-office systems and customer service organizations to provide superior service that customers value, thereby placing beneficial non-price competitive pressure on the incumbent. Most fundamentally, this competition lessens the ability of ILECs to exercise their market power in pricing these services, for the competition by UNE purchasers drives prices closer to their economic cost. UNE-based competitors can design cost-based local service packages that not only provide their customers with lower prices, but also can place competitive pressure on the incumbent LECs' rates. In this regard, these are the reasons that the Commission – like other regulatory bodies – has consistently recognized the economic value of resale and retail competition for decades, and these are the reasons that such competition has always been a cornerstone of the Commission's policies promoting competition generally.
80. Second, as I explained above, CLECs will deploy alternatives to ILEC facilities as soon as that is economically and technically feasible. UNE-P competition enhances the ability of CLECs to transition to facilities-based entry. UNE-P lowers barriers to entry and allows CLECs to enter the market. Once in the market, CLECs can begin to win customers and gain valuable information about customer demand and traffic flow. Once it has won

some customers, the CLEC would then have the traffic and the information to justify building its own facilities to serve those customers. This is critically important, because CLECs can rarely build facilities on the mere hope that they will one day be used. Most facilities, especially loops and transport, are dedicated to serve particular locations or customers; if the CLEC does not win customers on those routes, the investment is stranded. For this reason, UNE-based entry is a necessary bridge to facilities-based competition, because it allows the CLECs to enter the market and win the customers that would justify the build.⁴

81. As the CLEC builds more facilities, the back office systems and customer service operations that it has already established can be readily adapted for use in conjunction with the CLEC's new facilities-based operations. This is another way in which UNE-based competition acts as a bridge to facilities-based competition. A CLEC can initially allocate scarce risk capital to the establishment of a retail operation, which it can use in conjunction with UNEs to win customers and gain valuable market information. Once those systems are established and the CLEC has won some customers, it can allocate capital in a second stage of investment to building facilities. Because the existing retail and operations support systems can be easily adapted at little cost, the CLEC can then focus on facilities investment.

82. In addition, UNEs will play a useful procompetitive role even *after* there is a broadly

⁴ Of course, I am assuming that UNE-P is appropriately priced on the basis of forward-looking, economic costs. If the costs of serving customers using UNE-P is greater than the revenues generated, CLECs will not be able to compete.

available alternative to LEC networks, because by providing an avenue for further entry they will increase market contestability, thereby contributing to additional competitive pressures on pricing. Moreover, UNE sales will encourage wholesale competition to provide network elements because, among other things, the owners of alternatives will want to obtain the business of UNE purchasers instead of having all of that business go to the incumbent.⁵ Hence, the availability of UNEs would promote the lowest possible consumer prices, even as competition takes hold in local markets.

VI. ACTUAL MARKET EXPERIENCE HAS CONFIRMED THE BENEFITS OF UNES AND DEMONSTRATED THAT THE RESTRICTIONS THAT THE COMMISSION HAS IMPOSED ON THE AVAILABILITY AND USE OF UNES HAVE UNIFORMLY PREVENTED OR IMPEDED CLECS FROM DEPLOYING AND USING ALTERNATIVE FACILITIES.

83. Actual market experience has confirmed the economic analysis that is set forth above – and that was also set forth in my 1999 declaration and the Commission’s findings in its *UNE Remand Order*. The availability of UNEs in general – or of UNE-P in particular – has not impeded facilities-investment by CLECs or by ILECs, but restrictions that limit access to UNEs have impeded facilities investment.

84. First, CLECs have made network facilities investment where their economic costs seemed to be close to the ILECs’ costs, and – with the benefit of hindsight – it is now clear that CLECs made greater investments than were warranted under the economic and regulatory conditions that have prevailed. That is reflected by the business failures of

⁵ In addition, facilities-based competition sufficient to generate wholesale network element rates approximating per-unit TELRIC levels may emerge. Those wholesale markets may support robust competition that will complement and intensify the competition among the facilities-based providers.

scores of CLECs and what appears to be the uniform or nearly uniform underutilization of the facilities of those CLECs who remain in business and who are attempting to service customers on a relatively broad basis. Second, rather than foster greater facilities investment, the restrictions that the Commission adopted to limit access to certain UNEs caused or contributed to the failure of facilities-based CLECs and have prevented or impaired facilities-based competition. Third, the evidence forecloses any claim that ILEC investment is inhibited by the duty to make UNEs available, and the indications are that conditions for effective UNE competition has led to *greater* investment by ILECs as well as by CLECs.

A. CLECs Have Made Facilities Investments Where They Could Conceivably Provide Service At Economic Costs Close To Those Of UNEs And The Nearly Uniform Business Failures And Facility Underutilization Indicate That They Made Far Greater Investments Than Proved Warranted.

85. For reasons stated above, it appears wholly infeasible as an economic matter for any CLEC to attempt to duplicate the ILEC network of landline loops, switches, and transport facilities to serve residential and small to medium-sized businesses. But there are circumstances in which alternative facilities conceivably could be deployed at economic costs close to the ILECs' price for unbundled elements, and there are several basic business strategies that have been identified. The evidence is that each such strategy has been aggressively pursued over the past five years and there is no evidence that the availability of UNEs detracted from any of these efforts. To the contrary, it is now clear CLECs prematurely made greater investments than were warranted by subsequent developments.

86. The first option – and one that was highlighted in the legislative history of the 1996 Act –

is for cable television operators to upgrade their facilities so that telephone service is offered over channels of their existing networks. While several multiple system operators have not attempted to offer residential service over their cable systems, AT&T and Cox have done so in a number of their markets. This competition holds substantial promise, but even if it proves effective, the result will only be one alternative to the ILEC, not the multiple broad-based providers that is the object of the Act. *See UNE Remand Order* ¶ 55. To date, cable entrants nationwide are serving only less than 1% of the local market. *Local Telephone Competition*, Table 5 (Feb. 2002). I understand that CLECs are today serving almost as many local residential telephone customers through UNE-P in New York state alone than are served by all cable operators in the entire country.

87. Second, another option that had long been discussed is to use fixed wireless or other alternative radio technologies to provide service without the necessity of landline loops for “last mile” connections. This option, too, was aggressively pursued by AT&T and multiple firms, notwithstanding the availability of UNEs. But these efforts have been uniformly unsuccessful to date. Three prominent fixed wireless companies, Advanced Radio Telecom (“ART”), Winstar and Teligent have all filed bankruptcy petitions. Late last year, AT&T Wireless shut down its fixed wireless network, with most of its subscribers switching to ILECs,⁶ and AT&T Wireless wrote off \$1.3 billion of its fixed wireless investment and sold its fixed wireless business for just \$45 million.⁷ XO

⁶ *AT&T Wireless Shuts Down Fixed Wireless Network*, The Dallas Morning News Online (Jan. 3, 2002).

⁷ Peter J. Howe, *A Fixation on Fixed Wireless*, The Boston Globe, (Feb. 11, 2002).

Communications, the largest holder of Local Multipoint Distribution Service ("LMDS") in the United States, with licenses covering 95% of the population of the 30 largest U.S. cities,⁸ is currently negotiating with its bondholders for approval of a pre-packaged bankruptcy arrangement.⁹ Nationwide, fixed wireless providers are currently serving less than 1/10 of 1% of switched access lines.¹⁰

88. Third, there are the data CLECs. They have attempted to provide DSL-based and other high speed data services by investing in collocation space, data switches, DSLAMs, and other electronic equipment and associated facilities that enhance the transmission capabilities of existing loops. These are services that are inherently either provided through line-sharing arrangements (where the incumbent provides the voice service) or through a line-splitting arrangement (where the CLEC also provides voice under UNE-P or UNE-L). CLECs aggressively pursued these services – as reflected in the report that CLECs had deployed 9,524 data switches by 2001.¹¹

89. In this regard, three leading companies, Covad Communications, NorthPoint Communications and Rhythms NetConnections each began as regional providers and, by 1998, had begun to establish national, facilities-based footprints.¹² Analysts estimate

⁸ New Paradigm Resources Group, *CLEC Report 2002*, Ch. 2, page 10 (2002) (hereinafter "*NPRG 2002 CLEC Report*").

⁹ See Exhibit 1.

¹⁰ *Local Telephone Competition*, Table 5.

¹¹ *NPRG 2002 CLEC Report* Ch. 4, Table 17.

¹² *The DLECs' Demise*, Network World (Jan. 7, 2002).

these companies spent as much as \$1.5 billion building out their networks.¹³ But these companies quite clearly made investments that proved not to be warranted. Today, Rhythms and NorthPoint are out of business, with certain of their physical assets having been acquired by WorldCom and AT&T, respectively. In August 2001, Covad won bondholders' agreement to forgive \$1.4 billion in debt, allowing the company to file under Chapter 11, restructure and remain in business. With major DSL competitors in decline, today more than 80% of DSL connections are reportedly provided by ILECs.¹⁴ However, the provision of DSL-based services in conjunction with UNE-P or UNE-L is a critical part of the business plans of AT&T, WorldCom, and other CLECs, particularly because many customers demand voice and data from a single source. AT&T further has plans to use the high frequency portion of loops and its packet switching facilities to offer second and third voice lines as well as high-speed Internet access to customers. *See* Huels Dec., Part IV. As detailed in the Leshner-Frontera Declaration, AT&T has made substantial investments to provide these advanced services.

90. Finally, WorldCom, AT&T's local business arm, and a vast array of other CLECs pursued a local entry strategy of serving high volume customers through switches that they deployed and that sometimes would be located on fiber rings that they also deployed. High capacity loops would be deployed in the unusual circumstances where there were customers with sufficient volumes to justify the cost of constructing the loops, where the necessary rights-of-way and building-access rights could be obtained, where

¹³ *Id.*

¹⁴ *Id.*

deployment of the loops was otherwise economic, and where customers made commitments to buy service and were willing to wait for construction to be completed. In the overwhelming majority of cases, these CLECs would use loops and transport facilities to connect customers to their fiber rings or directly to their self-provisioned switches.

91. This strategy, too, has been aggressively pursued, and was not deterred in the slightest by the availability of UNEs and UNE-P. Indeed, as Ms. Brenner explains, AT&T's original strategy was to serve business customers exclusively through self-provisioned switches, and to rely on its fiber rings and self-provisioned loops where possible. AT&T made multibillion investments towards this end. *See generally* Leshner-Frontera Dec., Part III.B. So, too, did other CLECs. *See 2002 NPRG 2002 CLEC Report*, Ch. 4, Table 15.¹⁵
92. These CLECs' strategies were not inherently faulty. It appears that these investment would succeed if CLECs could obtain sufficient traffic volumes to allow their switches to achieve efficient scale and if they could connect their customers to their switches and carry traffic to them at costs close to those ILECs incur – such that the overall network costs were not materially greater than ILECs and covered by the revenues that would be generated. But it appears clear that these CLECs, too, made far greater investments than were warranted by subsequent developments. As detailed in the Leshner-Fontera Declaration, the facilities that AT&T has installed are severely underutilized.

¹⁵ I understand that in a previous filing in this proceeding, AT&T showed that the *2002 NPRG CLEC Report* overstated the extent of local facilities deployment by CLECs. *See generally* Pfau Use Restriction Dec. Thus, I rely on this report as a rough approximation of CLEC investment and not a precise calculation of actual investment.

93. Similarly, there have been widespread failures by other CLECs who have relied on self-provisioned switches and associated facilities to serve business customers.¹⁶ Many other CLECs that have self-provisioned switches have filed for bankruptcy. For example, E.Spire (28 voice switches in 2001), ICG Communications (43), Global Crossing (13), McLeod USA (50) and Mpower (reduced its switches in 2001 from 16 to 8) all fall in this category. *2002 NPRG 2002 CLEC Report*, Ch. 4, Table 15. Other CLECs who have substantial investments in self-provisioned switches have reported severe financial difficulties: *e.g.*, Adelphia Business Solutions (33 voice switches in 2001), Allegiance Telecom (30), Focal Communications (24), ITC (13), Network Plus (10) and XO Communications (35). *Id.*
94. Aggregate levels of CLEC investment in voice switches, fiber, and data switches have been substantial, and it grew through 2001. This CLEC investment occurred because CLECs were able initially to raise capital from Wall Street. For example, industry sources report that, in 1999 alone, CLECs attracted \$36 billion in debt financing. *Id.*, Ch. 2, p. 6. CLECs were able to attract this capital because investors believed that CLECs generally would be able to earn revenues that covered the CLECs' operational and capital costs.

¹⁶ One industry source reports that "failed CLECs utilized a lower percentage of their network capacity than successful carriers, which themselves utilize only 15% of installed capacity and 2-3% of capacity on long-haul routes." *2002 NPRG 2002 CLEC Report*, Ch. 2, p. 7.

Table 1: CLEC SWITCHES AND ROUTE MILES (1998-2001)¹⁷

Year	Voice Switches	Data Switches
1998	537	820
1999	767	1,260
2000	994	9,567
2001	1,244	9,524

95. However, facilities-based CLECs have, almost without exception, been unable to fill the facilities that they have deployed with sufficient traffic to cover the costs of the facilities and the CLECs' related support costs and investment. Table 2 below lists 37 CLECs who have petitioned for bankruptcy protection or who have been liquidated in bankruptcy in the past 18 months. Exhibit 1 hereto is a chart describing the dire financial status of many other facilities-based CLECs.

¹⁷ See generally *id.*; New Paradigm Resources Group, *CLEC Report 2001* (2001); New Paradigm Resources Group, *CLEC Report 2000* (2000). Again, I note that AT&T has raised serious doubts about the accuracy of the way NPRG calculated local fiber route miles in these reports. To the extent that CLEC switches must be connected to each other and to hub collocation cites, it is reasonable to expect that local fiber deployment has increased roughly in the same proportion as voice switch deployment over this time period.

Table 2: CLEC Bankruptcies in the Past Eighteen Months

American Metrocomm	August 1, 2000
Equalnet	August 9, 2000
Communications Options	September 1, 2000
NETtel	October 16, 2000
ICG Communications	November 14, 2000
Digital Broadband	December 27, 2000
Northpoint Communications	January 1, 2001
Vectris	January 18, 2001
Vitts Network	February 7, 2001
Omniplex Communications Group	February 28, 2001
ConnectSouth	March 12, 2001
e.spire Communications	March 22, 2001
Tess Communications	March 23, 2001
ATS Telecom	March 30, 2001
North American Telecom	April 1, 2001
Pathnet Telecommunications, Inc.	April 2, 2001
REAnet	April 2, 2001
Actel Integrated Communications	April 11, 2001
Winstar Communications	April 18, 2001
Convergent Communications	April 19, 2001
Advanced Radio Telecom	April 20, 2001
@Link Networks	April 25, 2001
Telscape International, Inc.	April 27, 2001
Broadband Office	May 9, 2001
2 nd Century	June 25, 2001
360 Networks	June 28, 2001
Novo Networks	July 1, 2001
Covad	August 1, 2001
Rhythms	August 1, 2001
PointOne	August 16, 2001
WCI Cable	August 20, 2001
Ardent Communications	October 11, 2001
Telergy, Inc.	October 26, 2001
Net2000 Communications, Inc.	November 16, 2001
Global Crossing	January 28, 2002
McLeodUSA	January 31, 2002
Mpower	(Announced impending filing) February 25, 2002

96. Although some analysts have attempted to explain this massive volume of business failures as a function of “bad business plans” or inept management,¹⁸ the list is far too long and the business plans associated with these companies far too varied to support such an overly-simplistic view. Moreover, the theory that bad management explains all of these CLEC failures is further belied by the fact that many CLECs identified as having “sound” business plans and “strong” management, petitioned for bankruptcy a short time after being so identified.¹⁹ For example, a June 2001 report identified Allegiance, Time Warner Telecom, McLeodUSA and XO Communications as firms that had been frequently characterized by analysts as “survivors” with “experienced leadership” or “strong management.”²⁰ However, less than a year later, each of these companies is in financial distress. McLeod is already in bankruptcy, XO is negotiating with its lenders over a prepackaged bankruptcy petition, Allegiance reports severe financial problems, and Time Warner Telecom has sought the Commission’s approval to withdraw from providing service in New York. *See* Exhibit 1. Further, AT&T and other highly sophisticated firms have, too, been in a position in which facilities that they have deployed have been severely underutilized and in which their substantial investments in local service are in jeopardy. *See generally* Leshner-Frontera Dec. Part IV.

97. In short, the evidence is quite conclusive that the availability of UNE-P and UNEs at

¹⁸ *See, e.g.*, Mark H. Redding, editor, CLEC.com, *Annus Horribilis? However you say it, CLECs have had a bad year*, (June 1, 2001) (available at www.adti.net/html_files/telecom/clec's_bad_year060101.html).

¹⁹ *See id.*

²⁰ *Id.*